Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims

1. (Currently amended) An array comprising (i) a flat substrate, (ii) anti-factor antibodies specific for secreted factors immobilized on the substrate, and (iii) a plurality of MHC molecules complexed with antigen-derived peptides immobilized in spatially-distinct areas on the substrate, ~~wherein~~ and further comprising at least one hydrophobic barrier that surrounds a plurality of said spatially-distinct areas; ~~are~~ and each of said spatially-distinct areas is not surrounded individually by a separate hydrophobic barrier, such that when a single volume of sample is applied inside of the at least one hydrophobic barrier, all areas in the plurality of said spatially-distinct areas are in contact with the single volume of sample ~~configured to allow contact with one sample at essentially the same time and with the same sample~~, and wherein at least one of the spatially-distinct areas comprises a plurality of MHC-peptide complexes that are different from the MHC-peptide complexes of at least one other spatially-distinct area.

2. (Original) The array of claim 1, wherein the MHC molecules in all of the spatially-distinct areas are the same.

3. (Currently amended) The array of claim 1, wherein all of the spatially-distinct areas are surrounded by a single hydrophobic barrier and each spatially-distinct area is not surrounded individually by a separate hydrophobic barrier such that when a single volume of sample is applied inside of the single hydrophobic barrier, all of the spatially-distinct areas are in contact with the single volume of sample ~~all of the spatially-distinct areas can be contacted with one sample at essentially the same time and with the same sample~~.

4. (Currently amended) The array of claim 1, wherein two or more groups of the plurality of spatially-distinct areas are each surrounded by a separate hydrophobic barrier and

each of said spatially-distinct areas is not individually surrounded by a hydrophobic barrier such that when a single volume of sample is applied inside of each separate hydrophobic barrier, all of the spatially-distinct areas within each group are in contact with the single volume of sample ~~can be contacted with a sample at essentially the same time and with the same sample~~, wherein the sample can be different for each group.

5. (Original) The array of claim 1, wherein the array comprises at least about 10, 50, or 100 different MHC-peptide complexes.

6. (Original) The array of claim 1, wherein the substrate is optically transparent.

7. (Original) The array of claim 1, wherein the substrate comprises glass, quartz, polystyrene, polycarbonate, polypropylene, polymethacrylate, or silicon.

8. (Previously presented) The array of claim 1, wherein the substrate is coated with gold, biotin, or streptavidin.

9. (Original) The array of claim 1, wherein the MHC-peptide complexes are immobilized on the substrate via the MHC molecule, which is immobilized via direct adsorption, peptide linkers, biotin-streptavidin; cysteine attachment; amine attachment; or metal chelate interaction.

10. (Withdrawn) The array of claim 1, wherein the MHC-peptide complexes are immobilized on the substrate via the antigen-derived peptide, which is immobilized via direct adsorption; peptide linkers; biotin-streptavidin; cysteine attachment; amine attachment; or metal chelate interaction.

11. (Previously presented) The array of claim 1, further comprising costimulatory molecules immobilized in said spatially-distinct areas on the substrate.

12. (Original) The array of claim 11, wherein the costimulatory molecules are selected from the group consisting of costimulatory antibodies and costimulatory agents.

13. (Original) The array of claim 12, wherein the costimulatory antibodies bind specifically to one or more of CD2, CD11a, CD28, or CD49d.

14. (Withdrawn) The array of claim 11, wherein the costimulatory agent is B7-1, B7-2, ICOSL, B7-H1, B7-DC, B7-H3, B7-H4, LFA-3, ICAM-1, or ICAM-2.

15. (Cancelled)

16. (Previously presented) The array of claim 1, wherein the MHC molecules comprise Class I MHC molecules, Class II MHC molecules, or Class I and Class II MHC molecules.

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Previously presented) The array of claim 1, wherein the immobilized anti-factor antibodies bind specifically to one or more of IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-9, IL-10, IL-12, IL-13, IL-16, interferon-gamma (IFN-γ), tumor necrosis factor alpha (TNF-α), tumor necrosis factor beta (TNF-β), GM-CSF, oncostatin M (OSM), macrophage migration inhibitory factor (MIF), TNF-Related Apoptosis Inducing Ligand (TRAIL), 4-1BB ligand (4-1BBL), or alpha-defensin.

21. (Cancelled)

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (Previously presented) The array of claim 1, wherein the anti-factor antibodies specific for secreted factors are immobilized in said spatially-distinct areas on the substrate.

26. (Withdrawn, previously presented) A method for identifying a T cell epitope, the method comprising:

obtaining an array of claim 1;

contacting the plurality of said spatially-distinct areas of the array with a sample comprising T cells at essentially the same time and with the same sample;

detecting a T cell interaction with an MHC-peptide complex; and

identifying the T cell epitope based on the identity of the MHC-peptide complex.

27. (Withdrawn) The method of claim 26, wherein the interaction is detected by detecting activation of T cells by one or more of factor secretion, expression of an activation marker, or an intracellular signal.

28. (Withdrawn) The method of claim 27, wherein the intracellular signal is calcium flux.

29. (Withdrawn) The method of claim 27, wherein the activation marker is CD3, CD4, CD8, Cd11a, CD25, CD27, CD28, CD44, CD49e, CD62L, CD69, CD71, CD95, CD152, or Ly6A.

30. (Withdrawn) The method of claim 27, wherein the secreted factor is IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-9, IL-10, IL-12, IL-13, IL-16, interferon-gamma, tumor necrosis factor alpha, TNF-b, GM-CSF, oncostatin M, macrophage migration inhibitory factor, TNF-Related Apoptosis Inducing Ligand, 4-1BB ligand, α-defensin, or CD40 ligand.

31. (Withdrawn) The method of claim 26, wherein the interaction is detected by detecting expression of CD40 ligand, CD30 ligand, CD27 ligand, or Fas ligand.

32. (Withdrawn, previously presented) The method of claim 26, wherein factor secretion is detected by detecting binding of a factor to an immobilized anti-factor antibody.

33. (Withdrawn) The method of claim 32, wherein the factor is IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-9, IL-10, IL-12, IL-13, IL-16, interferon-gamma, tumor necrosis factor alpha, TNF-b, GM-CSF, oncostatin M, macrophage migration inhibitory factor, TNF-Related Apoptosis Inducing Ligand, 4-1BB ligand, or α-defensin.

34. (Withdrawn, currently amended) A method of making an array, the method comprising providing a flat substrate, immobilizing anti-factor antibodies specific for secreted factors on said substrate, and immobilizing MHC molecules complexed with antigen-derived peptides in spatially-distinct areas on the substrate; wherein at least one hydrophobic barrier surrounds a plurality of said spatially-distinct areas; and each of said spatially-distinct areas is not surrounded individually by a separate hydrophobic barrier, such that when a single volume of sample is applied inside of the at least one hydrophobic barrier, all areas in the plurality of said spatially-distinct areas are in contact with the single volume of sample ~~a plurality of the spatially-distinct areas is configured to allow contact with one sample at essentially the same time and with the same sample~~, and wherein at least one of the spatially-distinct areas comprises a plurality of MHC-peptide complexes that are different from the MHC-peptide complexes of at least one other spatially-distinct area.

35. (Withdrawn) The method of claim 34, wherein the MHC molecules in all of the spatially-distinct areas are the same.

36. (Withdrawn, previously presented) The method of claim 34, wherein all of the spatially-distinct areas are surrounded with a hydrophobic barrier.

37. (Cancelled)

38. (Withdrawn) The method of claim 34, wherein the array comprises at least about 10, 50, or 100 different MHC-peptide complexes.

39. (Withdrawn) The method of claim 34, wherein the MHC molecules comprise Class I MHC molecules, Class II MHC molecules, or Class I and Class II MHC molecules.

40. (Withdrawn) The method of claim 34, wherein the substrate is optically transparent.

41. (Withdrawn) The method of claim 34, wherein the substrate comprises glass, quartz, polystyrene, polycarbonate, polypropylene, polymethacrylate, or silicon.

42. (Withdrawn) The method of claim 34, wherein the substrate is coated with gold, biotin streptavidin, or another molecule used to immobilize the MHC molecules.

43. (Withdrawn) The method of claim 34, wherein the MHC-peptide complexes are immobilized on the substrate via the MHC molecule, which is immobilized via direct adsorption, peptide linkers, biotin-streptavidin; cysteine attachment; amine attachment; or metal chelate interaction.

44. (Withdrawn) The method of claim 34, wherein the MHC-peptide complexes are immobilized on the substrate via the antigen-derived peptide, which is immobilized via direct adsorption; peptide linkers; biotin-streptavidin; cysteine attachment; amine attachment; or metal chelate interaction.

45. (Withdrawn) The method of claim 34, further comprising immobilizing costimulatory molecules on the substrate.

46. (Withdrawn) The method of claim 45, wherein the costimulatory molecules are selected from the group consisting of costimulatory antibodies and costimulatory agents.

47. (Withdrawn) The method of claim 46, wherein the costimulatory antibodies are one or more of anti-CD2, anti-CD11a, anti-CD28, or anti-CD49d.

48. (Withdrawn) The method of claim 46, wherein the costimulatory agent is B7-1, B7-2, ICOSL, B7-H1, B7-DC, B7-H3, B7-H4, LFA-3, ICAM-1, or ICAM-2.

49. (Withdrawn) The method of claim 34, further comprising immobilizing anti-factor antibodies specific for secreted factors on the substrate.

50. (Withdrawn) The method of claim 49, wherein the immobilized anti-factor antibodies comprise at least about one of antibodies specific for IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-9, IL-10, IL-12, IL-13, IL-16, IFN-γ, TNF-α, TNF-β, GM-CSF, oncostatin M, macrophage migration inhibitory factor, TNF-Related Apoptosis Inducing Ligand, 4-1BB ligand, or alpha-defensin.

51. (Cancelled)

52. (Withdrawn, previously presented) The method of claim 34, wherein the immobilized anti-factor antibodies comprise at least about one of antibodies specific for IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-9, IL-10, IL-12, IL-13, IL-16, IFN-γ, TNF-α, TNF-β, GM-CSF, oncostatin M, macrophage migration inhibitory factor, TNF-Related Apoptosis Inducing Ligand, 4-1BB ligand, or alpha-defensin.

53. (Withdrawn, previously presented) The method of claim 26, comprising contacting all of the spatially-distinct areas of the array with one sample at essentially the same time and with the same sample.

54. (Withdrawn, previously presented) The method of claim 26, further comprising incubating the plurality of the spatially-distinct areas of the array with the same sample simultaneously.

55. (Withdrawn, currently amended) The method of claim 53, further comprising incubating all of the spatially-distinct areas of the array with the same sample simultaneously.

56. (Withdrawn, currently amended) An array comprising (i) an amorphous substrate, (ii) anti-factor antibodies specific for secreted factors immobilized on the substrate, and (iii) a plurality of MHC molecules complexed with antigen-derived peptides immobilized in spatially-distinct areas on the substrate, such that when a single volume of sample is applied to a plurality of said spatially-distinct areas, all areas in the plurality of said spatially-distinct areas are in contact with the single volume of sample ~~wherein a plurality of said spatially-distinct areas are configured to allow contact with one sample at essentially the same time and with the same sample~~, and wherein at least one of the spatially-distinct areas comprises a plurality of MHC-peptide complexes that are different from the MHC-peptide complexes of at least one other spatially-distinct area.

57. (Withdrawn, previously presented) The array of claim 56, wherein the amorphous substrate comprises a plurality of beads or quantum dots.